Amendments to the Claims:

This listing of claims will replace all prior versions and listing, of claims in the application:

Listing of Claims:

1-51. (Canceled)

52. (previously presented): A sheet beam-type testing apparatus comprising:

a testing chamber having a stage for holding an object under testing;

a sheet beam generator for generating electron beam from said object as a sheet-shaped primary irradiation beam having a predetermined width;

an electro-optical system for guiding said beam in one direction and for guiding a secondary electron beam generated from said object in the opposite direction, said stage being movable relative to said electro-optical system;

an image processing system for receiving said secondary electron beam to output information of said object;

an information processing system for displaying and/or storing said information of said object; and

a transport mechanism for transporting said object into and out of said testing chamber, said transport mechanism comprising a mini-environment chamber for supplying a clean gas to said object to prevent dust from attaching to said object and a sensor provided within said mini-environment chamber for observing the cleanliness of said mini-environment chamber.

53. (previously presented): A sheet beam-type testing apparatus according to

claim 52, further comprising a shut-down device for shutting down said apparatus when said sensor detects that said cleanliness becomes under a predetermined value.

54. (previously presented): A sheet beam-type testing apparatus according to claim 52, wherein said testing chamber comprises a pre-charge unit for reducing any variation in electrical charge on said object and a potential applying unit for applying said object with an electrical potential.

55. (previously presented): A sheet beam-type testing apparatus according to claim 52, wherein said electro-optical system comprises an electrostatic lens including a plurality of electrodes having potential differences therebetween and spacers positioned between said electrodes;

wherein at least one of said electrodes has a first surface having a first distance from adjacent one of said electrodes, a second surface having a second distance longer than said first distance, and a step between said first and second surfaces;

and wherein each of said spacers are positioned between adjacent two of said electrodes to support said electrodes substantially vertically, a minimum distance along each of said spacers being substantially equal to a distance between adjacent two of said electrodes.

56. (previously presented): A sheet beam-type testing apparatus according to claim 55, wherein said electrodes are coated with a metal having a work

function of 5 eV or higher, said metal being one of platinum and an alloy of platinum.

57. (previously presented): A sheet beam-type testing apparatus according to claim 52, further comprising a mechanical structure for determining a position of said object at which said object is irradiated by the primary irradiating beam;

a piezoelectric element for receiving a force by a vibration of said mechanical structure; and

a vibration attenuating circuit electrically connected to said piezoelectric element for attenuating an electric energy outputted from said piezoelectric element.

58. (previously presented): A sheet beam-type testing apparatus according to claim 57, wherein said vibration attenuating circuit comprises an inductance element, said inductance element being connected to said piezoelectric element to form a resonant circuit, and the inductance of said inductance element being determined with respect to static capacitance of said piezoelectric element such that a resonant frequency of said resonant circuit substantially matches a resonant frequency of said mechanical structure.

59. (previously presented): A sheet beam-type testing apparatus according to claim 58, wherein said vibration attenuating circuit further comprises a resistive element connected in series to said resonant circuit.

60. (previously presented): A sheet beam-type testing apparatus according to claim 52, further comprising:

an alignment controller for controlling alignment of said object with respect to said electro-optical system; and

a position measuring unit for detecting coordinates of said object on said stage by utilizing a pattern existing on said object; and

a stage controller for causing said object to position at predetermined coordinates by using the output of said position measuring unit.

61. (previously presented): A sheet beam-type testing apparatus according to claim 52, wherein said stage holds said object with a degree of freedom of at least two with respect to said electro-optical system, and

wherein said stage comprises a non-contact supporting mechanism by hydrostatic bearings and a vacuum sealing mechanism through differential pumping, a partition being disposed between said object and said hydrostatic bearing for reducing a conductance to produce a pressure difference.

62. (previously presented): A sheet beam-type testing apparatus according to claim 61, wherein said partition contains a differential pumping structure.

63. (previously presented): A sheet beam-type testing apparatus according to claim 61, wherein said partition contains a cold trap function.

64. (previously presented): A sheet beam-type testing apparatus according to claim 61, wherein said partition is disposed at least two locations near said sheet beam

generator and near said hydrostatic bearing.

65. (previously presented): A sheet beam-type testing apparatus according to claim 61, wherein a gas selected from a group comprised of dry nitrogen or an inert gas is supplied to said hydrostatic bearings.

66. (previously presented): A sheet beam-type testing apparatus according to claim 61, wherein the gas supplied to said hydrostatic bearing is circulated from a housing containing said stage to said hydrostatic bearings after being pressurized.

67. (previously presented): A sheet beam-type testing apparatus according to claim 61, wherein a surface treatment is applied to at least surfaces of the components facing said hydrostatic bearings for reducing gas discharge.

68. (previously presented): A sheet beam-type testing apparatus according to claim 52,

wherein said image processing system includes an image capturing device for capturing images of a plurality of regions on said object, and a storing device for storing a reference image; and

wherein said information processing system is operable to compare said images of said plurality of regions with the reference image to determine a state of said object.

69. (previously presented): A sheet beam-type testing apparatus according to claim 68, wherein said plurality of images are captured by said image processing means as said object is being displaced while said images are partially overlapped.

70. (previously presented): A sheet beam-type testing apparatus according to claim 68, wherein said image processing system includes a scintillator screen and a micro-channel plate for detecting said secondary electron beam and sequentially outputting image signals.

71. (previously presented): A sheet beam-type testing apparatus according to claim 70, said image processing system further comprising a solid-state imaging device for capturing a scintillator image.

72. (previously presented): A sheet beam-type testing apparatus according to claim 52, further comprising a beam deflector for deflecting the primary irradiating beam to irradiate a region on said object with the primary irradiating beam.

73. (previously presented): A sheet beam-type testing apparatus according to claim 52, wherein said apparatus is operable to detect defects on said object selected from a group comprised of a wafer and a semiconductor.

74. (previously presented): A sheet beam-type testing apparatus according to claim 73, wherein said apparatus is operable to conduct measurement selected from a

group comprised of measurement of a circuit wire defect, measurement of line width, measurement of alignment precision and measurement of potential contrast.

75. (previously presented): A sheet beam-type testing apparatus according to claim 52, wherein said electro-optical system is operable to accelerate said secondary electron beam by a decelerating electric field-type objective lens.

76. (previously presented): A semiconductor device manufacturing method using a sheet beam-type testing apparatus as claimed in claim 52, comprising the steps of

working a semiconductor device;

manufacturing said worked semiconductor device;

observing said manufactured semiconductor device; and

testing said manufactured semiconductor device.

77. (previously presented): A semiconductor device manufacturing method using a sheet beam-type testing apparatus as claimed in claim 76, wherein said step of manufacturing comprises a step of drawing a circuit pattern of a semiconductor device on said object.

78. (previously presented): A device manufacturing apparatus comprising a sheet beam-type testing apparatus as claimed in claim 52 for evaluating one of a wafer and a semiconductor.

79. (previously presented): A plural beam-type testing apparatus comprising:

a plurality of charged particle beam sources; and

a plural beam generator for forming a plurality of charged particle beams and including a partition wall disposed to receive said plurality of charged particle beams, said wall having a plurality of holes, each of said holes being disposed in said wall to pass the charged particle beam for a corresponding one of said beam sources.

80. (previously presented): A plural beam-type testing apparatus according to claim 79, wherein each of said holes is disposed at a position offset from the irradiating axes of said corresponding one of said beam sources.

81. (previously presented): A plural beam-type testing apparatus according to claim 79, wherein said partition wall has a high rigidity.

82. (previously presented): An electron beam apparatus comprising:

a stage for holding an object under testing;

a beam generator for generating a charged particle beam from said object as the primary beam;

an electro-optical system for guiding said primary beam in one direction and for guiding a secondary charged particle beam generated from said object in the opposite direction;

an EXB separator for applying a magnetic field and an electric field to said secondary charged particle beam to deflecting said primary or secondary charged

particle beam thereby separating said secondary charged particle beam from said primary beam, an amount of deflection effected by the magnetic field being equal to twice an amount of deflection effected by the electric field, and a direction of deflection effected by the magnetic field is opposite to a direction of deflection by the electric field.

83. (previously presented): A focus condition adjusting method for an electron beam apparatus having an electron beam source for irradiating an electron beam through an objective lens to patterns formed on an object, said method comprising the steps of:

(a) setting said objective lens to a first excitation condition;

(b) scanning said electron beam across a pattern edge parallel to a first direction to obtain a secondary charged particle beam signal in the first direction;

(c) obtaining first data indicative of a rising width of the pattern edge in the first direction;

(d) scanning said electron beam across a pattern edge parallel to a second direction to obtain a secondary charged particle beam signal in the second direction;

(e) obtaining second data indicative of a rising width of the pattern edge in the second direction;

(f) setting said objective lens to a second excitation condition;

(g)executing the steps (b) and (c) to obtain third data indicative of a riding width of the pattern edge parallel to the first direction;

(h)executing the steps (d) and (e) to obtain fourth data indicative of a rising width of the pattern edge parallel to the second direction;

(i) setting said objective lens to a third excitation condition;

(j) executing the steps (b), (c), (d) and (e) to obtain fifth and sixth data indicative of rising widths of the pattern edges in the first and second directions;

(k) calculating, through hyperbolic approximation, an optimum excitation condition of said objective lens for the pattern edge in the first direction from the first, third and fifth data;

(l) calculating, through hyperbolic approximation, an optimum excitation condition of said objective lens for the pattern edge in the second direction from the second, fourth and sixth data;

(m) calculating a mean value between the optimum excitation conditions calculated in the steps (k) and (l); and

(n) setting said objective lens to the mean value calculated in the step (m).

84. (previously presented): A focus condition adjusting method according to claim 83, further comprising the steps of:

(o) setting said objective lens to a first astigmatism correction condition;

(p) executing the steps (b) and (c) in claim 10 to obtain first data indicative of a rising width of the pattern edge in the first or second direction;

(q) setting said objective lens to a second astigmatism correction condition;

(r) executing the steps (b) and (c) in claim 10 to obtain second data indicative of a rising width of the pattern edge in the first or second direction;

(s) setting said objective lens to a third astigmatism correction condition;

(t) executing the steps (b) and (c) in claim 10 to obtain third data indicative of a rising width of the pattern edge in the first or second direction;

(u) calculating, through hyperbolic approximation, an optimum astigmatism correction condition from the first, second and third data; and

(v) setting an astigmatism correction condition of said objective lens to the optimum value calculated in the step (u).

85. (previously presented): An electron beam apparatus comprising:

an electron source comprising a first electrode applied with a voltage close to a ground and a second electrode applied with a voltage remote from the ground;

an objective lens;

a secondary electron detector,

a first controller having a mechanism for changing a focal length of said objective lens by changing a voltage applied to said first electrode;

a second controller having a mechanism for changing a voltage applied to said second electrode to largely change the focal length of said objective lens; and

a third controller having a mechanism for changing a voltage applied to said first electrode to change the focal length of said objective lens with high speed.

86. (previously presented): An electron beam apparatus including an electron source and a stage for holding an object under test, said apparatus further comprising:

a voltage source for applying a voltage said object, said voltage being changeable from zero to a predetermined value; and

an electrostatic chuck having an electrode to which a voltage associated with a voltage applied to said object is applied to electrostatically chuck and hold said object; and

a controller for controlling said voltage source to cause a voltage to be applied to said object to be gradually deepened to reach to a predetermined value during a predetermined period.

87. (previously presented): An electron beam apparatus according to claim 86, wherein said electrode comprises a first electrode and a second electrode, and wherein said controller is operable to cause said voltage source to apply a voltage to said first electrode to place said object at a low potential or a ground potential and subsequently to apply a voltage to said second electrode.

88. (previously presented): An electron beam apparatus according to claim 86, wherein said electrostatic chuck comprises a laminate of a substrate, an electrode and an insulator, and wherein a voltage is applied to said object through a contact.

89. (previously presented): An electron beam apparatus according to claim 87, wherein said contact has such a shape that a leading end comes in contact with a back surface of said object.

90. (previously presented): An electron beam apparatus for irradiating an object under test by an electron beam; comprising:

a retarding voltage applying unit for applying said object with a retarding voltage; and

a controller for controlling said retarding voltage applying unit to apply an optimal retarding voltage to said object, said controller including a charge-up checking unit for measuring a charge-up state of said object and a determination unit for determining an optimal retarding voltage on the basis of the output of said charge-up checking function unit to thereby enabling said retarding voltage applying unit to apply said optimum retarding voltage to said object.

91. (previously presented): An electron beam apparatus according to claim 90, wherein said charge-up checking unit evaluates a charge-up state of said object based on the magnitude of a distorted or blurred pattern at a particular site of said object when said apparatus detects a secondary charged particle beam and forms an image.

92. (previously presented): An electron beam apparatus according to claim 90, wherein said charge-up checking function unit is operable to apply said object with a variable retarding voltage so that said apparatus can form, while a plurality of retarding voltages are applied to said object, an image of said object near a boundary where a pattern density largely varies.

93. (previously presented): An electron beam apparatus according to claim 92, further comprising an image display device for displaying said image for evaluation.

94. (canceled).

95. (new): An electron beam apparatus comprising:

a stage for holding an object under testing;

a beam generator for generating a charged particle beam from said object as the primary beam;

an electro-optical system for guiding said primary beam in one direction and for guiding a secondary charged particle beam generated from said object in the opposite direction;

an EXB separator for applying a magnetic field and an electric field to said secondary charged particle beam to deflecting said primary or secondary charged particle beam thereby separating said secondary charged particle beam from said primary beam; wherein,

a deflection angle for the primary beam or the secondary beam is about 3 times as large as the deflection angle fro the secondary beam or the primary beam, respectively.